

Appl. No. : **Unknown**
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AMENDMENTS TO THE CLAIMS

1. (Original) A column for use in an analytical temperature rising elution fractionation analysis of a crystalline or a semi-crystalline polymer sample solution characterized in that the packing of said column comprises elastic wires.

2. (Original) Column according to claim 1, wherein the packing of said column comprises elastic wires, having a Young modulus higher than 50 GPa.

3. (Currently Amended) Column according to ~~any of~~ claims 1 ~~or~~ 2, wherein the packing of said column comprises elastic wires having a thermal conductivity higher than $0.1 \text{ W cm}^{-1} \text{ K}^{-1}$.

4. (Currently Amended) Column according to ~~any of~~ claims 1 ~~to~~ 3, wherein the packing of said column comprises elastic wires having a length of at least 2mm and a diameter of less than 1 mm.

5. (Currently Amended) Column according to ~~any of~~ claims 1 ~~to~~ 4, wherein said elastic wires are made of stainless steel, metal, carbon fibers or glass fibers.

6. (Currently Amended) Column according to ~~any of~~ claims 1 ~~to~~ 5, wherein the packing of said column comprises elastic wires having a length per diameter (LID) of at least 3.

7. (Currently Amended) Column according to ~~any of~~ claims 1 ~~to~~ 6, wherein said column is made of stainless steel, glass, ceramic, or a polymer.

8. (Currently Amended) Column according to ~~any of~~ claims 1 ~~to~~ 7, said column having an internal diameter less than 20 mm a length comprised between 50 and 500 mm. "

9. (Currently Amended) Device for use in an analytical temperature rising elution fractionation analysis comprising the column according to ~~any of~~ claims 1 ~~to~~ 8, a temperature controlling system for controlling the temperature of said column, a sample injector for injecting a polymer sample solution into said column, a pump for eluting the polymer fractions from said column and a detector for detecting eluting fractions of said sample solution.

10. (Original) Device according to claim 9, wherein said detector is a differential refractive index (DRI) detector.

11. (Currently Amended) A method for performing an ATREF analysis of a crystalline or a semi-crystalline polymer solution comprising the steps of:

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injecting a sample of said polymer solution into the column according to ~~any of~~
claims 1 ~~to~~ 8,

crystallizing said polymer sample solution in said column over a cooling
temperature gradient to produce a crystallized polymer sample while keeping solvent
flowing through said column;

eluting said crystallized polymer sample by increasing the temperature of said
column over a heating temperature gradient to produce eluted fractions of the polymer
sample solution, said fractions being eluted in function of the temperature; and

measuring the concentration of the eluted fractions of polymer sample solution by
means of a detector.

12. (Original) Method according to claim 11, wherein the concentration of the
eluted fractions of polymer sample solution are measured using a differential refractive index
detector.

13. (Currently Amended) Method according to claim 11 ~~or~~ 12, wherein the column is
provided in a temperature controlling system.

14. (Currently Amended) Method according to ~~any of~~ claims 11 ~~to~~ 13, wherein an
amount of polymer lower than 2.0 mg polymer is injected into the column.

15. (Currently Amended) 15 Method according to ~~any of~~ claims 11 ~~to~~ 14, wherein a
volume of the polymer sample solution lower than 1.0 ml is injected into the column.

16. (Currently Amended) Method according to ~~any of~~ claims 11 ~~to~~ 15, wherein said
polymer sample solution is injected automatically.

17. (Original) Method according to claim 16, wherein said polymer sample
solution is injected automatically at a flow rate lower than 2.0 mL/min.

18. (Currently Amended) Method according to ~~any of~~ claims 11 ~~to~~ 17, wherein the
crystallization of said polymer sample solution in said column is performed over a cooling
temperature gradient with a maximum temperature below 210°C.

19. (Currently Amended) A method according to ~~any of~~ claims 11 ~~to~~ 18, wherein the
crystallization of said polymer sample solution in said column is performed at a cooling rate
higher than 0.5 °C per minute.

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20. (Currently Amended) Method according to ~~any of~~ claims 11 ~~to~~ 19, wherein the elution of the crystallized polymer sample is performed over a heating temperature gradient with a maximum temperature up to 210°C.

21. (Currently Amended) Method according to ~~any of~~ claims 11 ~~to~~ 20, wherein the elution of the crystallized polymer sample is performed at a heating rate higher than 0.5°C per minute.